

INTEGRATED SAMPLE ANALYSIS DEVICE

ABSTRACT OF THE DISCLOSURE

An analysis device comprises a body having a reaction chamber for chemically reacting a sample, a separation region for separating components of the sample, and a transition region connecting the reaction chamber to the separation region. The transition region includes at least one valve for controlling the flow of fluid between the reaction chamber and the separation region. Further, the transition region thermally isolates the reaction chamber from the separation region. In a preferred embodiment, the reaction chamber is an amplification chamber for amplifying nucleic acid in the sample, and the separation region comprises an electrophoresis channel containing a suitable matrix material, such as electrophoresis gel or buffer, for separating nucleic acid fragments. Electrodes are embedded in the body for separation of sample components. The body may also be surrounded by external, functional components such as an optical detector for detecting separated components of the sample.